SUPPORTING INFO

AFM Measurement

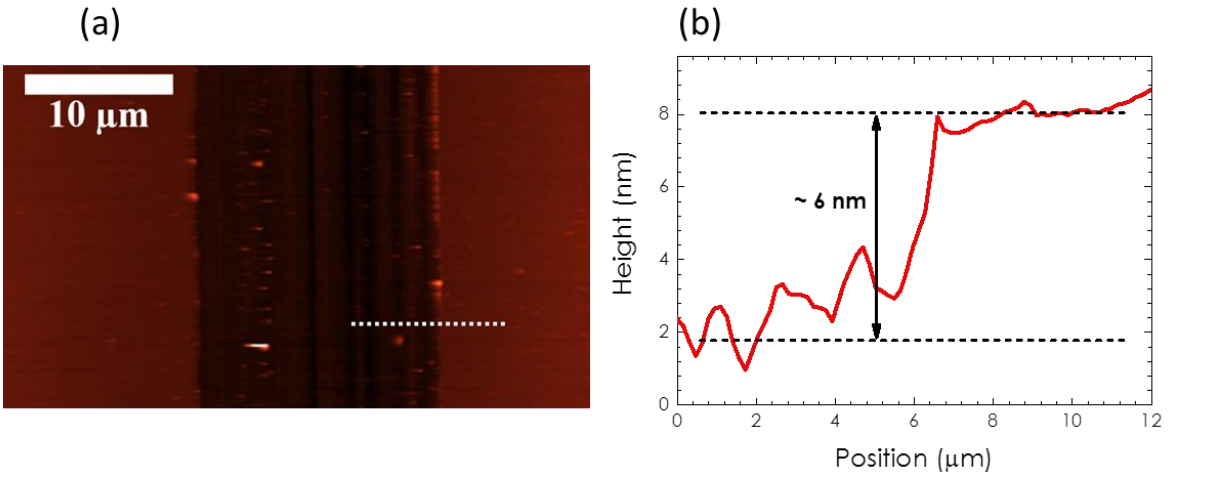

Figure S1. (a) AFM of a cut in the QD PMMA layer (b) Measurement of the step height of the layer.

Power Dependence

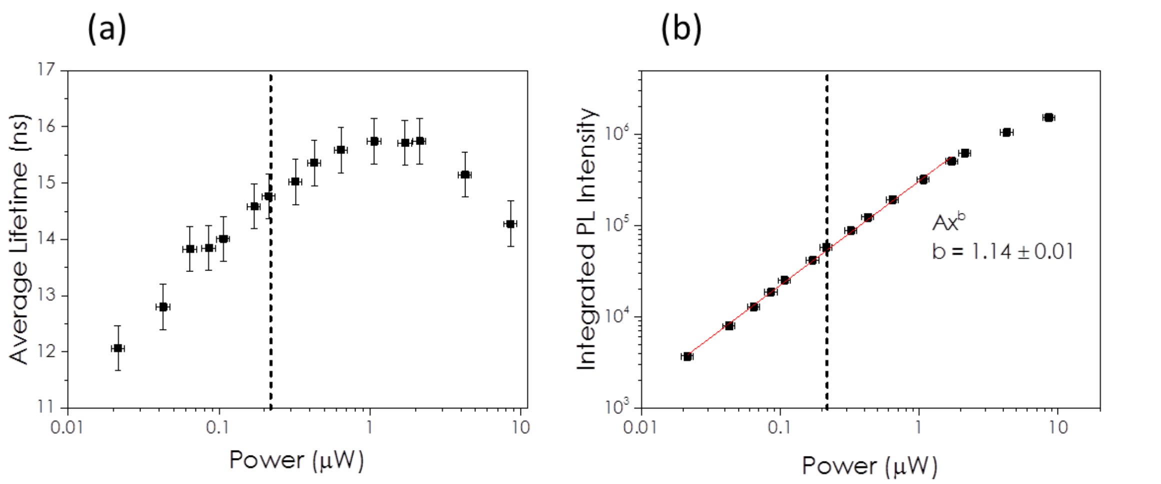

Figure S2. (a) Dependence of the QD lifetime on excitation power. Dashed line represents the power at which subsequent measurements were taken. (b) Dependence of the QD integrated PL intensity on excitation power. Solid red line is a fit to a power law with b = 1.14 ± 0.01, i.e. a linear increase with power, indicating only single exciton generation in each QD. The dashed line shows the power at which the measurements are taken.

The dependence of the QD average lifetime and PL intensity on excitation power is shown in Figure S2. The QD lifetime increases with increasing power (Figure S2a), and the PL intensity increases linearly with excitation power (Figure S2b) indicating single exciton generation in each QD. The fall-off in both the lifetime and PL intensity at high power is attributed to the onset of photobleaching. The dashed line shows the power at which subsequent measurements are taken. It was selected to ensure that the QDs are pumped in the linear regime, away from the onset of photobleaching effects

FDTD Simulations

The extinction (absorption + scattering) of the arrays were simulated using plane-wave excitation. The PMMA and GaN layers are modelled with a constant dielectric permittivity of ε_{PMMA} = 2.2 and ε_{GaN} = 5.35, respectively. The dielectric permittivity of the Ag and Ti materials are included using experimentally measured data from Palik.[64]

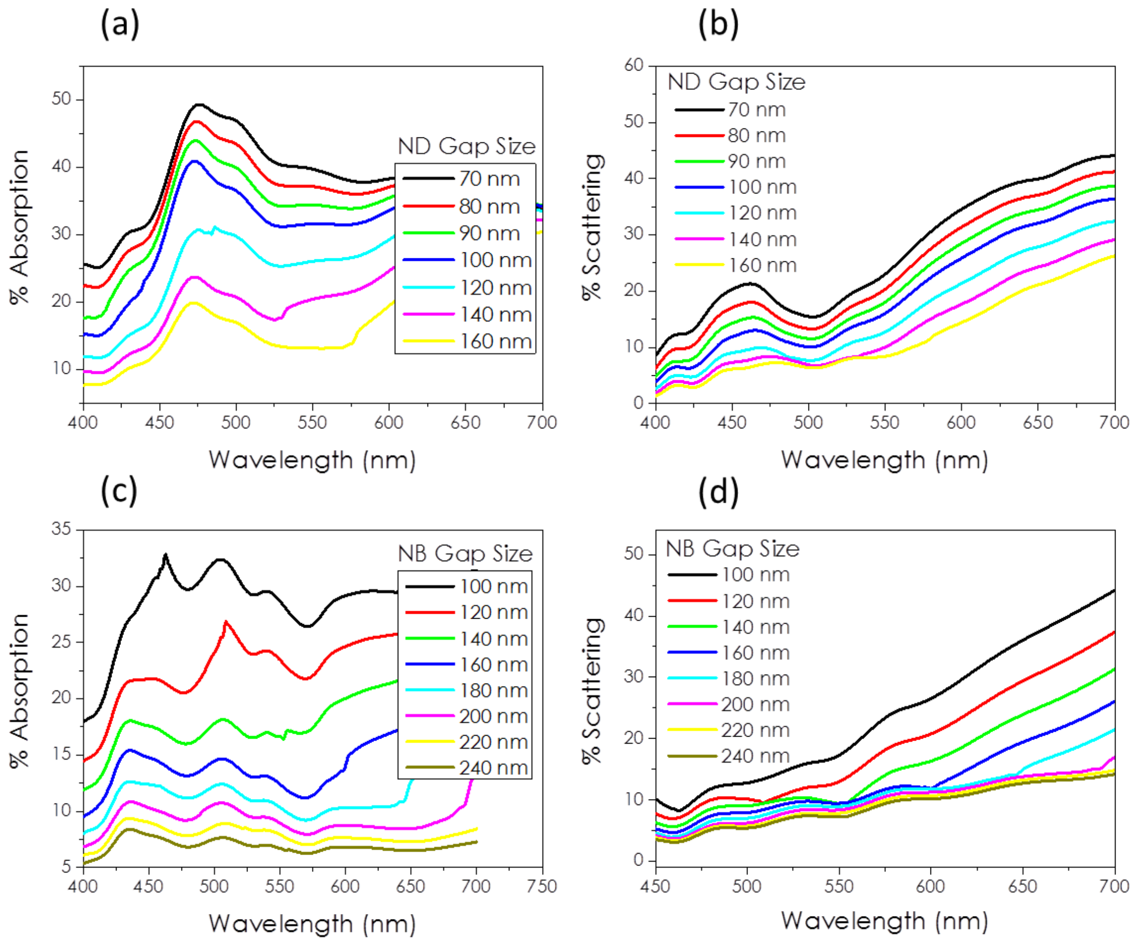

Figure S3. (a) Simulated absorption and (b) scattering profiles versus wavelength for the ND arrays with varying gap size from 70 nm to 160 nm. (c) Simulated absorption and (d) scattering profiles versus wavelength for the NB arrays with varying gap size from 100 nm to 250 nm.